

**Amendments to the Claims**

This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

Claim 1. [Currently Amended] A method for electrochemically depositing a polysaccharide having a selected physical state, onto a substrate surface, wherein said method comprises comprising:  
providing a substrate comprising said a substrate surface, said the substrate surface comprising an electrically conductive support;  
contacting the electrically conductive support with an aqueous solution comprising a selectively insolubilizable polysaccharide; and  
electrochemically depositing the selectively insolubilizable polysaccharide on the electrically conductive support while controlling deposition conditions to form a polysaccharide mass having a selected physical state deposited onto said substrate surface.

Claim 2. [Currently Amended] ~~A method according to The method of~~ claim 1, wherein the selected physical state comprises that of a hydrogel.

Claim 3. [Currently Amended] ~~A method according to The method of~~ claim 2, wherein said electrochemically depositing is conducted at a current density of about 20 A/m<sup>2</sup> to about 100 A/m<sup>2</sup>.

Claim 4. [Currently Amended] ~~A method according to The method of~~ claim 2 or 3, wherein said electrochemically depositing is conducted at a pH of about 5 to about 5.5.

Claim 5. [Currently Amended] ~~A method according to any one of claims 2 to 4~~ The method of claim 4, wherein said electrochemically depositing is conducted for a deposition time of about 2 minutes to about 30 minutes.

Claim 6. [Currently Amended] ~~A method according to any one of claims 1 to 5~~ The method of claim 1, wherein said controlling of deposition conditions comprises varying the deposition conditions during said electrochemical deposition to provide the polysaccharide mass with a hydrogel portion and a solid compact film portion.

Claim 7. [Currently Amended] ~~A method according to~~ The method of claim 6, wherein the hydrogel portion is layered on top of the solid compact film portion.

Claim 8. [Currently Amended] ~~A method according to any one of claims 1 to 7~~ The method of claim 1, wherein the selectively insolubilizable polysaccharide comprises an ionizable group that is ionized to provide a positive charge.

Claim 9. [Currently Amended] ~~A method according to~~ The method of claim 8, wherein the ionizable group comprises ~~a member selected from~~ an alkyl amine group, a primary amine group, a secondary amine group, a tertiary amine group, a guanidinium group, an imidazole group, an indole group, a purine group, a pyrimidine group, and or a pyrrole group.

Claim 10. [Currently Amended] ~~A method according to claim 8~~ The method of claim 9, wherein the ionizable group comprises a primary amine group.

Claim 11. [Currently Amended] ~~A method according to~~ The method of claim 10, wherein the selectively insolubilizable polysaccharide comprises chitosan.

Claim 12. [Currently Amended] ~~A method according to any one of claims 1 to 11~~  
The method of claim 11, further comprising treating the polysaccharide mass with a sufficiently basic solution to stabilize the polysaccharide mass.

Claim 13. [Currently Amended] ~~A method according to any one of claims 1 to 7~~ The method of claim 1, wherein the selectively insolubilizable polysaccharide comprises an ionizable group that is ionized to provide a negative charge.

Claim 14. [Currently Amended] ~~A method according to The method of~~ claim 13, wherein the ionizable group comprises ~~a member selected from~~ an alkoxide group, a carboxyl group, a hydroxy acid group, a phenolic group, a phosphate group, and or a sulphydryl group.

Claim 15. [Currently Amended] ~~A method according to The method of~~ claim 14, wherein the ionizable group comprises a carboxyl group.

Claim 16. [Currently Amended] ~~A method according to any one of claims 1 to 7 and 13 to 15~~ The method of claim 13, further comprising treating the polysaccharide mass with a sufficiently acidic solution to stabilize the polysaccharide mass.

Claim 17. [Currently Amended] ~~A method according to any one of claims 1 to 16~~  
The method of claim 1, wherein the substrate comprises a non-conducting, inorganic material.

Claim 18. [Currently Amended] ~~A method according to The method of~~ claim 17, wherein the substrate comprises silicon.

Claim 19. [Currently Amended] ~~A method according to any one of claims 1 to~~ The method of claim 18, wherein the electrically conductive support comprises gold.

Claim 20. **[Currently Amended]** ~~A method according to any one of claims 1 to 19~~  
The method of claim 1, wherein:  
the electrically conductive support is patterned and the substrate surface further comprises an electrically non-conductive portion; and  
said depositing comprises selectively depositing the selectively insolubilizable polysaccharide on the patterned electrically conductive support.

Claim 21. **[Currently Amended]** ~~A method according to The method of claim 20,~~  
wherein the patterned electrically conductive support comprises a plurality of parallel lines spaced apart from one another.

Claim 22. **[Currently Amended]** ~~A method according to any one of claims 1 to 21~~  
The method of claim 1, wherein the polysaccharide mass comprises a hydrogel, and wherein the method further comprises entrapping in the hydrogel at least one member selected from the group consisting of colloids, micelles, vesicles and cells.

Claim 23. **[Currently Amended]** ~~A method according to The method of claim 1,~~  
wherein the selectively insolubilizable polysaccharide comprises chitosan, and wherein the polysaccharide mass comprises a hydrogel[[],].

Claim 24. **[Currently Amended]** A method for conjugating molecules a component to a polysaccharide mass, said component being a biomolecular species, a cellular species or a nucleic acid molecule, wherein said method comprises comprising:  
providing a polysaccharide mass having a selected physical state and derived from a selectively insolubilizable polysaccharide deposited on an electrically conductive support; and  
coupling other molecules said component to the polysaccharide mass.

Claim 25. **[Currently Amended]** ~~A method according to The method of~~ claim 24, further comprising:

providing a substrate comprising a substrate surface, the substrate surface

comprising an electrically conductive support;

contacting the electrically conductive support with an aqueous solution comprising a selectively insolubilizable polysaccharide; and

electrochemically depositing the selectively insolubilizable polysaccharide on the electrically conductive support while controlling deposition conditions to form the polysaccharide mass having a selected physical state.

Claim 26. **[Currently Amended]** ~~A method according to The method of~~ claim 25, wherein the selectively insolubilizable polysaccharide comprises chitosan, and wherein the polysaccharide mass comprises a hydrogel[1,].

Claim 27. **[Currently Amended]** ~~A method according to The method of~~ claim 25 or 26, wherein said electrochemically depositing is conducted at a current density of about 20 A/m<sup>2</sup> to about 100 A/m<sup>2</sup>.

Claim 28. **[Currently Amended]** ~~A method according to any one of claims 25 to 27~~  
**The method of claim 25**, wherein the polysaccharide mass comprises a hydrogel, and wherein the method further comprises entrapping in the hydrogel at least one member selected from the group consisting of colloids, micelles, vesicles and cells.

Claim 29. **[Currently Amended]** ~~A method according to any one of claims 25 to 28~~  
**The method of claim 25**, wherein said coupling of ~~the other molecules~~ said component to the selectively insolubilizable polysaccharide is performed prior to said electrochemically depositing step.

Claim 30. [Currently Amended] A method according to any one of claims 25 to 28  
The method of claim 25, further wherein said coupling of the other  
molecules said component to the polysaccharide mass is performed after said  
electrochemically depositing step.

Claim 31. [Currently Amended] A method according to any one of claims 25 to 30  
claim 25, further comprising modifying the selectively insolubilizable  
polysaccharide to improve conjugatability with a reactive groups of other  
molecules of said component.

Claim 32. [Currently Amended] A method according to any one of claims 24 to 32  
claim 24, wherein said coupling comprises covalent bonding.

Claim 33. [Currently Amended] A method according to any one of claims 24 to 32  
claim 24, wherein said other molecules molecule or said cellular species  
comprises one, two, three or more enzyme species.

Claim 34. [Currently Amended] A method according to any one of claims 24 to 32  
claim 24, wherein said other molecules component comprises an one, two,  
three or more antibody species.

Claim 35. [Currently Amended] A method according to any one of claims 24 to 32  
claim 24, wherein said other molecules component comprises a one, two,  
three or more receptor molecule species.

Claim 36. [Currently Amended] A method according to any one of claims 24 to 32  
claim 24, wherein said other molecules component comprises a one, two,  
three or more nucleic acid molecule species.

Claim 37. [Currently Amended] A method according to ~~any one of claims 24 to 32~~  
~~claim 24~~, wherein said ~~other molecules~~ component is ~~are~~ modified to include  
a tyrosine residue[[s]].

Claim 38. [Currently Amended] A method according to claim 37, wherein said  
coupling of the ~~other molecules~~ molecule or said cellular species to the  
selectively insolubilizable polysaccharide comprises a tyrosinase-catalyzed  
oxidation reaction.

Claim 39. [Original] A material comprising a selectively insolubilizable polysaccharide  
hydrogel deposited on an electrically conductive support.

Claim 40. [Currently Amended] The A material comprising a selectively  
insolubilizable polysaccharide of claim 39, wherein the hydrogel is  
deposited in a spatially selective manner.

Claim 41. [Currently Amended] A device comprising a material of claim 39 ~~or 40~~.

Claim 41. [Original] A device according to claim 41, wherein the device comprises a  
microelectromechanical system.

Claim 43. [Currently Amended] A device according to claim 41~~or~~ 42, wherein the  
device comprises microchannels fabricated in a substrate such that electrodes  
are located within the microchannels to enable selective electrodeposition  
using fluidic flow in the microchannels.